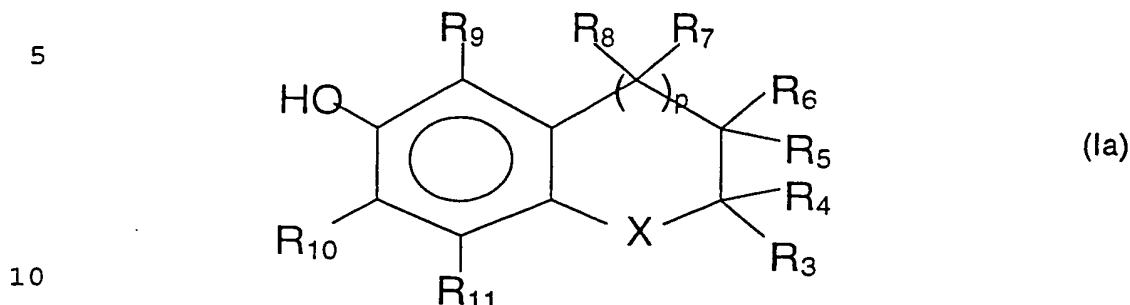


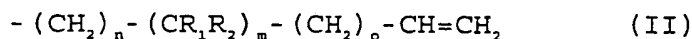
AMENDED CLAIMS

1. E-vitamin derivative or a compound analogous with it, having the formula (I)



where X is an oxygen or sulfur atom, p is an integer 0 or 1, and $R_1 - R_{11}$ are identical or different groups selected from hydrogen, C_{1-6} alkyl or α -alkene having the formula (II)

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where n, m and o are integers 0 - 4 independent of each other and $m + n + o$ is an integer 1 - 6, and R_1 and R_2 are identical or different groups selected from hydrogen or C_{1-6} alkyl or C_{1-6} alkene, which may be substituted with an aromatic ring,

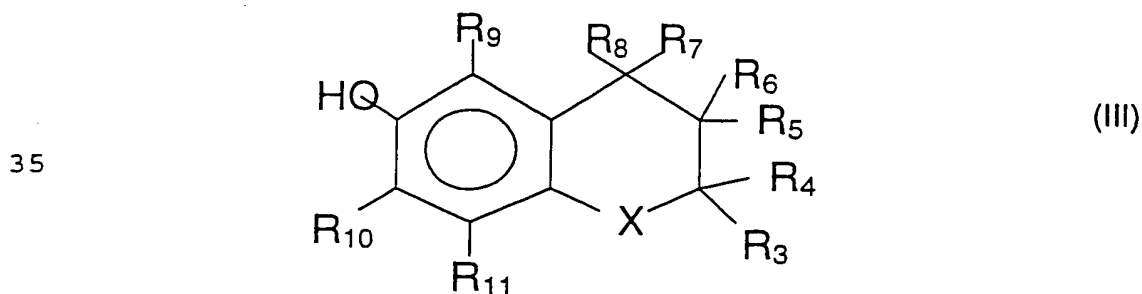
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or R_7 and R_8 are together an oxygen atom and/or R_4 and R_5 and/or R_{10} and R_{11} form together with the carbon atoms to which they are bonded a benzene ring, which may be substituted with groups selected from hydrogen, C_{1-6} alkyl or α -alkene.

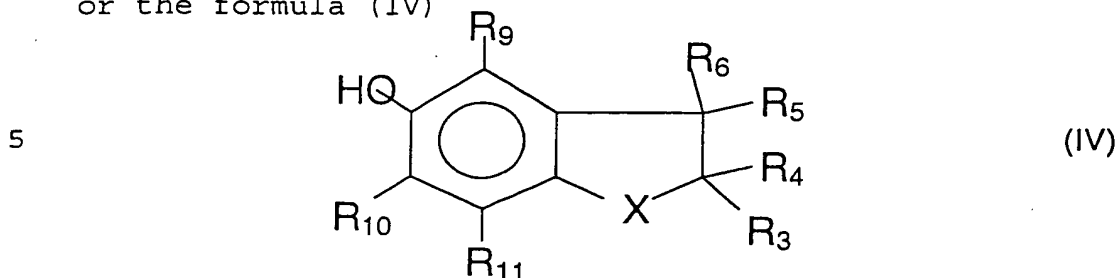
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2. Derivative as defined in claim 1, characterized in that it has the formula (III)

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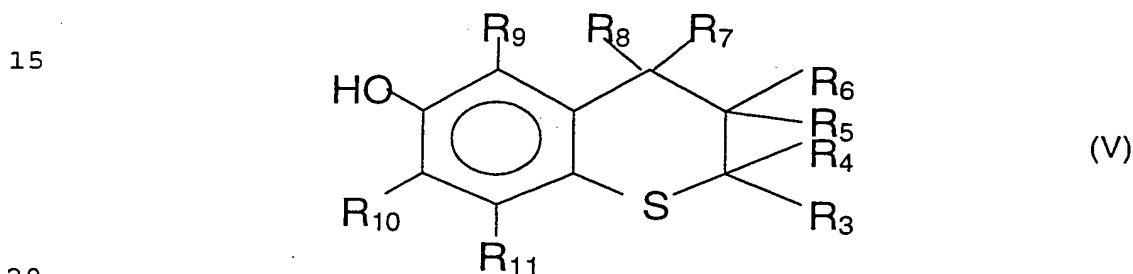


or the formula (IV)



10 where X is an oxygen or sulfur atom and $R_3 - R_{11}$ are identical or different groups selected from hydrogen, C_{1-6} alkyl or α -alkene having the formula (II).

3. Derivative as defined in claim 1, characterized in that it has the formula (V)



where $R_3 - R_{11}$ are identical or different groups selected from hydrogen, C_{1-6} alkyl or α -alkene having the formula (II),

25 or R_7 and R_8 are together an oxygen atom and/or R_4 and R_5 and/or R_{10} and R_{11} form together with the carbon atoms to which they are bonded a benzene ring, which may be substituted with groups selected from hydrogen, C_{1-6} alkyl or α -alkene.

30 4. Derivative as defined in claim 1 or 2, characterized in that one of groups R_3 and R_4 or one of groups R_5 and R_6 is hydrogen or a C_{1-6} alkyle and the other an α -alkene consistent with formula (II) and $R_7 - R_{11}$ are hydrogens or C_{1-6} alkyls.

35 5. Derivative as defined in any one of claims 1, 2 or 4, characterized in that R_1 and R_2 are hydrogens.

6. Derivative as defined in claim 1, 2 or 4 -
5, characterized in that it has formula
(III), where X is oxygen, one of groups R_3 and R_4 is a
methyl group and the other is an α -alkene consistent
5 with formula (II), where $n + m + o$ equals 1 or 2 and R_1
- R_2 and R_9 - R_8 are hydrogens and R_9 - R_{11} are methyl
groups.

7. Derivative as defined in claim 1, 2 or 4 -
5, characterized in that it has formula (IV),
10 where X is oxygen, R_1 - R_4 are hydrogens, one of groups
 R_9 and R_8 is an α -alkene consistent with formula (II),
where $n + m + o$ equals 4, and R_9 - R_{11} are methyl
groups.

8. Derivative as defined in claim 1 or 2,
15 characterized in that one of groups R_9 - R_{11}
is an α -alkene consistent with formula (II) and two of
the groups are hydrogens or C_{1-6} alkyls, and R_9 - R_8 are
hydrogens or C_{1-6} alkyls.

9. Derivative as defined in any one of claims
20 1, 2 or 8, characterized in that R_{10} and R_{11}
are hydrogens or C_{1-6} alkyls, R_9 is an α -alkene consis-
tent with formula (II), where n is 0 or 1, m is 0 or 1
and o is an integer 1 - 4 and R_1 - R_2 are hydrogens or
 C_{1-6} alkyls.

25 10. Derivative as defined in any one of
claims 1, 2 or 8 - 9, characterized in that
it has formula (III), X is oxygen, R_1 - R_4 and R_{10} - R_{11}
are methyl groups, R_9 - R_8 are hydrogens and R_9 is an α -
alkene consistent with formula (II), where n is 0, m
30 is 1 and o is 3.

11. Derivative as defined in any one of
claims 1, 2 or 8 - 9, characterized in that
it has formula (III), X is oxygen, R_1 - R_4 and R_{10} - R_{11}
are methyl groups, R_9 - R_8 are hydrogens and R_9 is an α -
35 alkene consistent with formula (II), where m is 0 and
 $o + n$ equals 1.

12. derivative as defined in claim 1 or 3, characterized in that one of groups $R_9 - R_{11}$ is an α -alkene consistent with formula (II) and the other groups are hydrogens or C_{1-6} alkyls, and $R_3 - R_8$ are hydrogens or C_{1-6} alkyls or R_7 and R_8 are together an oxygen atom and/or R_4 and R_5 form a benzene ring together with the carbon atoms to which they are bonded.

13. Derivative as defined in any one of claims 1, 3 or 12, characterized in that R_{10} is an α -alkene consistent with formula (II) where n is 0 or 1, m is 0 or 1 and o is an integer 1 - 4 and R_1 and R_2 are methyl groups, R_3 is a C_{1-6} alkyl, R_{11} is a hydrogen, R_7 and R_8 are together an oxygen atom and R_4 and R_5 , together with the carbon atoms to which they are bonded, form a benzene ring.

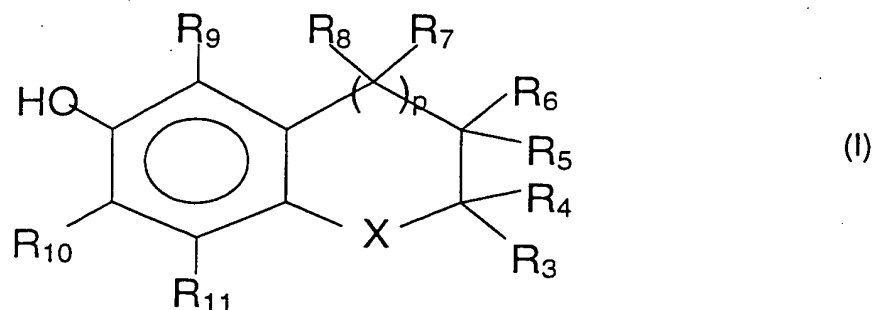
14. Derivative as defined in any one of claims 1 - 13, characterized in that it is 6-hydroxy-2,5,7,8-tetramethyl-2-(but-3-enyl)-chromane, 6-hydroxy-2,5,7,8-tetramethyl-2-(prop-2-enyl)-chromane, 6-hydroxy-2,2,7,8-tetramethyl-5-(1,1-dimethyl-hex-5-enyl)-chromane, 6-hydroxy-2,2,7,8-tetramethyl-5-(prop-2-enyl)-chromane, 5-hydroxy-4,6,7-trimethyl-3-(hex-5-enyl)-benzofurane or a hydroxythioxanthone derivative.

15. Method for producing an E-vitamin derivative or a compound analogous with it, which has the formula (Ia), characterized in that

- (A) a hydroquinone derivative is allowed to react with a suitable unsaturated alcohol or thiol, or
- (B) a hydroquinone derivative is allowed to react with a suitable unsaturated alcohol or thiol and an α -alkylene is added to the fused heterocyclic derivative thus formed.

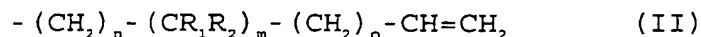
16. Use of an E-vitamin derivative or a compound analogous with it, having the formula I

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10 where X is an oxygen or sulfur atom, p is an integer 0 or 1, and R₃ - R₁₁ are identical or different groups selected from hydrogen, C₁₋₆alkyl or α-alkene having the formula (II)

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where n, m and o are integers 0 - 4 independent of each other and R₁ and R₂ are identical or different groups selected from hydrogen or C₁₋₆alkyl or C₁₋₆alkene, which may be substituted with an aromatic ring,

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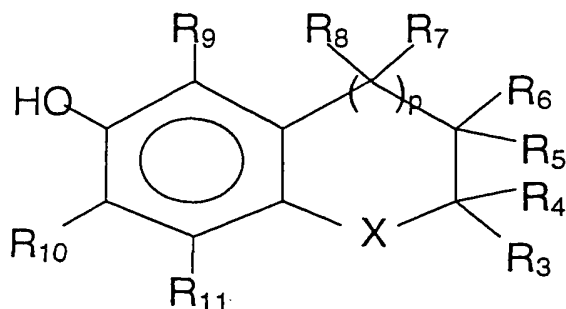
or R₇ and R₈ are together an oxygen atom and/or R₄ and R₅ and/or R₁₀ and R₁₁ form together with the carbon atoms to which they are bonded a benzene ring, which may be substituted with groups selected from hydrogen, C₁₋₆alkyl or α-alkene as a stabilizing comonomer for the production of stabilized copolymer.

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17. Stabilized copolymer, comprising at least one monomer variety, which is an olefin and/or a cyclic and/or aromatic compound containing an α-alkene chain, and a stabilizing comonomer, characterized in that the comonomer is an E-vitamin derivative or a compound analogous with it, which has the formula (I)

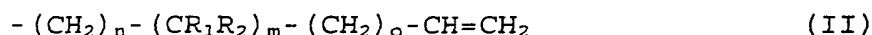
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(I)

where X is an oxygen or sulfur atom, p is an integer 0 or 1, and R₃ - R₁₁ are identical or different groups selected from hydrogen, C₁₋₆alkyl or α-alkene having the formula (II)



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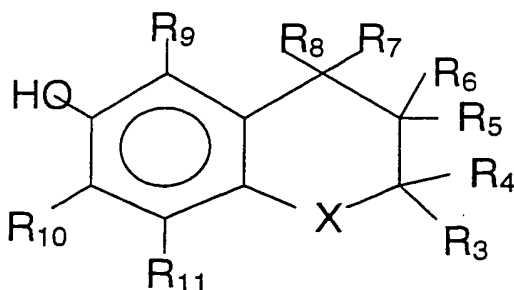
where n, m and o are integers 0 - 4 independent of each other and R₁ and R₂ are identical or different groups selected from hydrogen or C₁₋₆alkyl or C₁₋₆alkene, which may be substituted with an aromatic ring,

20

or R₇ and R₈ are together an oxygen atom and/or R₄ and R₅ and/or R₁₀ and R₁₁ form together with the carbon atoms to which they are bonded a benzene ring, which may be substituted with groups selected

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18. Stabilized copolymer as defined in claim 17, characterized in that the comonomer has the formula (III)

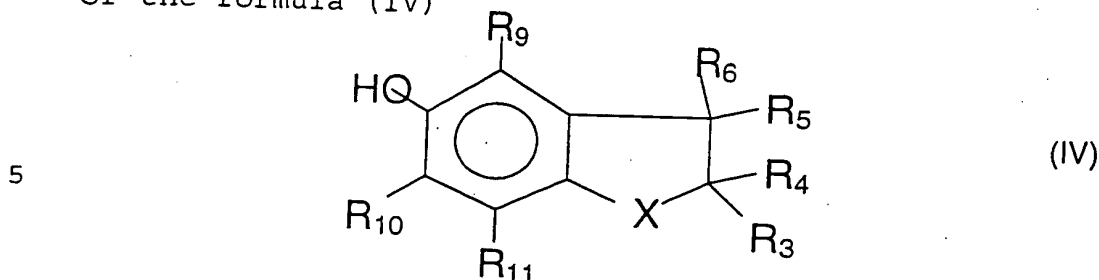


(III)

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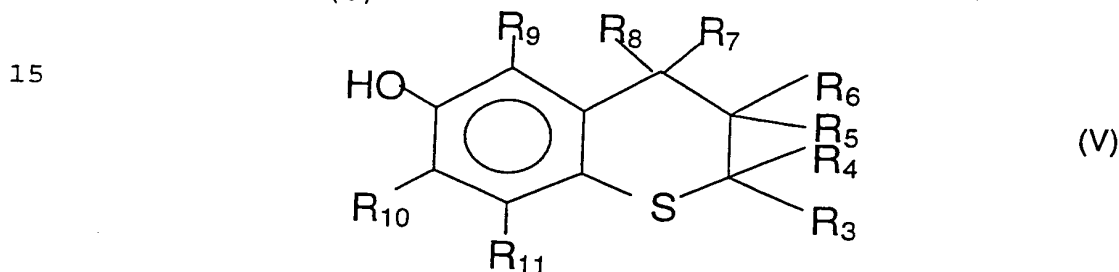
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or the formula (IV)



where X is an oxygen or sulfur atom and $R_3 - R_{11}$ are identical or different groups selected from hydrogen, C_{1-6} alkyl or α -alkene having the formula (II).

19. Stabilized copolymer as defined in claim 17, characterized in that the comonomer has the formula (V)



20 where $R_3 - R_{11}$ are identical or different groups selected from hydrogen, C_{1-6} alkyl or α -alkene having the formula (II),

or R_7 and R_8 are together an oxygen atom and/or R_4 and R_5 and/or R_{10} and R_{11} form together with the carbon atoms to which they are bonded a benzene ring, which may be substituted with groups selected from hydrogen, C_{1-6} alkyl or α -alkene.

20. Stabilized copolymer as defined in any one of claims 17 - 19, characterized in that the olefin is ethylene, propylene, butylene and/or pentene.

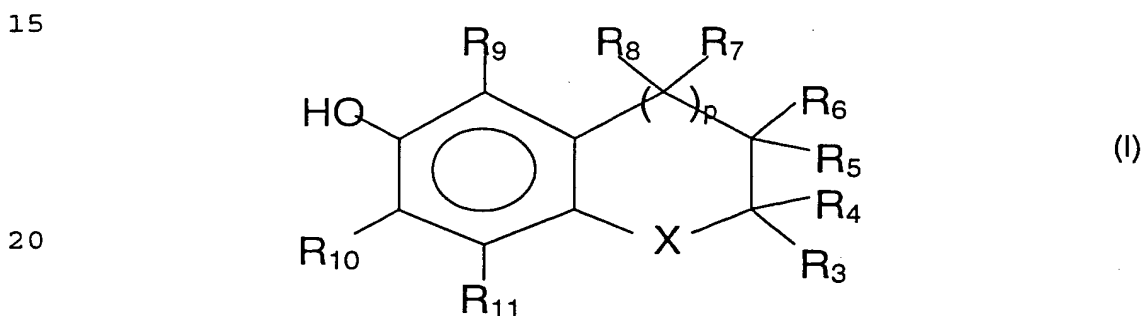
21. Stabilized copolymer as defined in any one of claims 17 - 20, characterized in that the aromatic compound is styrene.

22. Stabilized copolymer as defined in any one of claims 17 - 21, characterized in that the copolymer consists of one olefin or styrene mono-

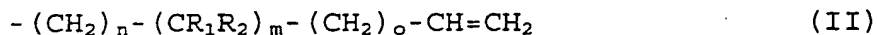
mer and comonomer consistent with formula (III), (IV) or (V).

23. Stabilized copolymer as defined in any one of claims 17 - 22, characterized in that the copolymer has a substantially regular structure.

24. Method for the production of stabilized copolymer, wherein at least one monomer variety, which is an olefin and/or a cyclic and/or aromatic compound containing an α -alkene chain, and a stabilizing comonomer are copolymerized in the presence of a catalyst by a polymerization technique known in itself, characterized in that the comonomer used is an E-vitamin derivative or a compound analogous with it, having the formula (I)



where X is an oxygen or sulfur atom, p is an integer 0 or 1, and R₃ - R₁₁ are identical or different groups selected from the set hydrogen, C₁₋₆alkyl or α -alkene having the formula (II)



30 where n, m and o are integers 0 - 4 independent of each other and R₁ and R₂ are identical or different groups selected from hydrogen or C₁₋₆alkyl or C₁₋₆alkene, which may be substituted with an aromatic ring,

35 or R₇ and R₈ are together an oxygen atom and/or R₄ and R₅ and/or R₁₀ and R₁₁ form together with the carbon atoms to which they are bonded a benzene

ring, which may be substituted with groups selected from hydrogen, C₁₋₆alkyl or α -alkene.

25. Method as defined in claim 24, characterized in that the comonomer used is a comonomer consistent with formula (III), (IV) or (V).

26. Method as defined in claim 24 or 25, characterized in that the copolymerization is performed using a metallocene catalyst or its derivative.

27. Method as defined in any one of claims 24 - 26, characterized in that the catalyst used in copolymerization contains a π -cyclo-pentadienyl transition metal compound and an alumoxane compound.

28. Method as defined in any one of claims 24 - 27, characterized in that the catalyst used in copolymerization contains a π -cyclo-pentadienyl transition metal compound and a compound containing boron.

29. Method as defined in any one of claims 24 - 28, characterized in that the comonomer has been complexed to the catalyst.

30. Method as defined in any one of claims 24 - 29, characterized in that the olefin is ethylen, propylene, butylene and/or pentene.

31. Method as defined in any one of claims 24 - 30, characterized in that the aromatic compound is styrene.

32. Method as defined in any one of claims 24 - 31, characterized in that the amount of monomer and stabilizing comonomer supplied into the process is exactly defined.